Eating Breakfast: Effects of the School Breakfast Program

Authorized by the Child Nutrition Act of 1966, the School Breakfast Program started as a pilot program to provide funding for breakfast in poor areas and areas where children had to travel a great distance to school. The intent was to provide a nutritious breakfast to children who might otherwise not receive one. In 1975 the School Breakfast Program became permanent, with the objective of having the program ''available in all schools where it is needed to provide adequate nutrition for children in attendance.'' To expand the availability of the program, the Child Nutrition Act of 1989 required that the Secretary of Agriculture provide funds to States to support the costs of starting school breakfast programs in low-income areas.

All public and private elementary and secondary schools in the United States are eligible to participate in the School Breakfast Program, and to participate, schools must make breakfast available to all students. Breakfasts in the program are required to provide about one-fourth of the Recommended Dietary Allowance (RDA) for important nutrients over a period of time. To the extent that the School Breakfast Program increases the percentage of children who eat breakfast, the program can be expected to improve children's diet and school performance.

Studies of the influence of the School Breakfast Program on the likelihood of eating breakfast, however, do not provide strong evidence that children attending schools with the School Breakfast Program are more likely than other children to eat breakfast. Older studies of the first National Evaluation of School Nutrition Programs (NESNP-1) had mixed results. Data from the 1992 School Nutrition Dietary Assessment study (SNDA-1) suggest that the availability of the School Breakfast Program does not affect whether a student eats breakfast: the percentage of students eating breakfast was the same in schools that participated in the School Breakfast Program as in schools that did not, even after demographic and socioeconomic characteristics were controlled.

Defining Adequate Breakfast

An important issue to consider in examining school breakfast is the definition of breakfast. In the SNDA-1, breakfast was defined as the consumption of at least 50 calories between the time of waking and 45 minutes after the start of school. Recently, what constitutes an adequate or substantive breakfast has been debated; questions have been raised about the 50-calorie cutoff and whether eating breakfast ought to encompass a higher calorie cutoff or be based on foods or food groups.

This report presents findings from a re-analysis of the SNDA-1, which used alternate definitions of breakfast. The re-analysis of SNDA-1 data on the likelihood of eating breakfast includes two main components:

- Review of the literature on breakfast consumption patterns to identify alternate definitions of eating breakfast and, based on this review, recommend alternate definitions.
- Re-analysis of SNDA-1 data using the alternate definitions of breakfast.

Literature on breakfast consumption encompasses a broad range of definitions. Studies examining breakfast consumption fall into two primary groups: (1) those focusing on whether breakfast is eaten and (2) those examining the effects that eating breakfast has on various performance measures. In general, studies that examine whether breakfast is eaten use self-reports of breakfast consumption or whether any food or beverage was consumed after waking in the morning to define breakfast. Studies examining breakfast consumption typically do not use a definition that reflects any minimal calorie content or attempt to define an adequate breakfast. In contrast, studies that focus on the effects that eating breakfast has on cognitive tests and performance measures typically use some minimal calorie content to define breakfast.

Students Eating Breakfast

As the definition of eating breakfast becomes more robust and includes more foods or more calories, the percentage of students who eat breakfast declines (table 1). To illustrate, 88 percent of students consumed some food or beverage, but only 45 percent of students ate a breakfast that included food from at least two of the main food groups and had breakfast intake of food energy greater than 15 percent of the RDA. (The main food groups were milk and milk products, meat and meat alternates, grain products, fruits and fruit juices, and vegetable and vegetable juices.) About 1 of 10 students had a breakfast that was equal to or exceeded what School Breakfast Program meals are designed to offer: food from at least three of the four School Breakfast Program food groups and breakfast intake of food energy greater than 25 percent of the RDA. (The food groups

Table 1. Percentage of students eating breakfast: Alternate definitions

Alternate definition	Percentage eating breakfast		
	Total sample	Elementary school students	Middle and high school students
Any food item consumed	88	93	84
Breakfast intake of food energy >50 Kcal	87	92	83
Breakfast intake of food energy >100 Kcal	84	90	79
Breakfast intake of food energy >150 Kcal	78	83	74
Breakfast intake of food energy >200 Kcal	72	77	68
Breakfast intake of food energy >10 percent of the RDA	69	76	62
Breakfast intake of food energy >15 percent of the RDA	50	54	45
Consuming food from at least two of the main food groups[1]	71	81	62
Consuming food from at least two of the main food groups and breakfast intake >10 percent of the RDA	61	71	53
Consuming food from at least two of the main food groups and breakfast intake >15 percent of the RDA	45	51	40
Consuming food from at least three of the four SBP food groups and breakfast intake >20 percent of the RDA[2]	17	20	14
Consuming food from at least three of the four SBP food groups and breakfast intake >25 percent of the RDA[2]	11	12	9
Sample size (unweighted)	3,381	1,611	1,770

[1]The main food groups are (1) milk and milk products, (2) meat and meat alternates, (3) grain products, (4) fruits and fruit juices, and (5) vegetable and vegetable juices.
[2]The School Breakfast Program (SBP) food groups are (1) milk and milk products, (2) meat and meat alternates, (e) grain products, and (4) fruits and vegetables or full-strength fruit or vegetable juices.
Source: School Nutrition Dietary Assessment (SNDA-1) data, weighted.

of the School Breakfast Program are milk and milk products, meat and meat alternates, grain products, and fruits and vegetables or full-strength fruit or vegetable juices.) The likelihood of eating any breakfast, regardless of how it is defined, declines with age: 93 percent elementary school students versus 84 percent of middle and high school students.

Case 1 defines breakfast as any food or beverage consumed. Controlling for student and family characteristics, researchers found the difference in the predicted percentage of students eating breakfast with and without a School Breakfast Program being available is small and statistically insignificant for the total sample as well as for students from low-income households (table 2). These results are consistent with earlier studies that found no effect of the School Breakfast Program on the likelihood of children eating any food or food containing a minimal number of calories.

However, when breakfast is defined as intake of food energy greater than 10 percent of the RDA (Case 2) and still controlling for student and family characteristics, the likelihood of eating breakfast is significantly higher for

Table 2. Predicted percentage of students eating breakfast

Sample	School Breakfast Program	
	Available	Not available
Case 1: Any food or beverage consumed.		
Case 2: Breakfast intake of food energy >10 percent of RDA.		
Case 3: Consumed food from two food groups and breakfast intake of food energy >10 percent of RDA.		
Total sample		
Case 1	88.0	88.8
Case 2	70.6	68.3
Case 3	62.9	60.3
Low-income sample		
Case 1	87.5	86.2
Case 2	73.5**	63.4
Case 3	67.4**	54.8
Elementary school students		
Case 1	94.1	93.1
Case 2	78.6	75.1
Case 3	72.3	69.6
Low-income elementary students		
Case 1	93.4	90.3
Case 2	81.7**	65.9
Case 3	76.8**	62.3

** $p<0.01$.

Source: School Nutrition Dietary Assessment (SNDA-1) data.

low-income students attending schools with a School Breakfast Program than for comparable students attending schools without it (74 vs. 63 percent). Similarly, when breakfast is defined as consumption of food from two or more food groups and intake of food energy greater than 10 percent of the RDA (Case 3), the predicted percentage of students eating breakfast is significantly higher for low-income students attending schools with a School Breakfast Program than for comparable students attending schools without it (67 vs. 55 percent).

The estimated effects of the availability of the School Breakfast Program on the likelihood of eating breakfast are largest for low-income elementary students. Two of the more robust definitions of breakfast are (1) consuming food from at least three of the four food groups of the School Breakfast Program and intake greater than 20 percent of the RDA and (2) consuming food from at least three of the four food groups of the School Breakfast Program and intake greater than 25 percent of the RDA. The predicted percentages of low-income elementary students eating breakfast are significantly higher for students attending schools with a School Breakfast Program than for students attending schools without it. For both of the more robust breakfast definitions, low-income elementary students attending schools with a School Breakfast Program are
23 percent more likely to consume breakfast than similar students attending schools without the School Breakfast Program.

Expansion of the School Breakfast Program is a policy issue currently being debated. The findings from re-analysis of the 1992 School Nutrition Dietary Assessment study suggest that expanding the program to low-income students would be associated with their increased likelihood of consuming a breakfast that included at least 10 percent of the RDA for food energy. In 1992 about two-thirds of low-income students attended schools with the School Breakfast Program, suggesting that a significant percentage of low-income students would be affected by an expansion of the School Breakfast Program.

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